

## Christabel Osei-Boateng, 3MT<sup>®</sup> Presentation

With any goal, comes sacrifice. As a former competitive athlete, my sacrifice only came in the form of a few sprained ankles, but not everyone is so lucky. Each year almost 600 thousand Canadians report at least 1 concussion. And in Ontario alone, treatment for brain injury costs almost half a billion dollars. So why isn't there a definitive test for diagnosing concussions. Well, let me ask you this - Have you ever had a headache, nausea or trouble sleeping? These symptoms can be caused by many things, and unfortunately, this includes concussions. So with these alarming stats, why even take a chance with risks like contact sport?

Well if you're a competitive athlete or just an avid sports fan, you understand that nothing beats being a champion. Raising a trophy or wearing a gold medal makes all the hard work worth it. Whether it's Football, Hockey, or MMA, sports bring in countless viewers worldwide. But how many actually consider the physical toll it takes on the body? It's so much more than just bumps and bruises, and far more complex than a straight path to a championship. That's where my research comes in. We wanted to assess the effects of contact sport on overall brain health, and do it in a new way. So, we didn't just run our study after a game or 2, we followed a team of jr. Football athletes for an entire season. But before I continue, let's think about where we're at.

Currently, brain injuries are mainly diagnosed by self-reported symptoms. But a crucial aspect of these injuries is the damage that occurs to a protective layer in the brain known as the BBB. When this happens, certain biomarkers in the brain easily cross through this layer and increase in our blood.

One of these markers is known as Glial Fibrillary Acidic Protein or GFAP. Despite all this information, no studies have linked regulation of brain blood flow to markers like GFAP. That's what makes this study the first of its kind.

We took blood samples before & after every game in the athletes. And even with 0 diagnosed concussions all season, we found significant increases in GFAP post game compared to pre-game. This suggests that just playing contact sport results in mild brain injury.

We even took it a step further and ran a number of new brain health tests in the pre and post season to explore if there is a direct link between diminished brain health and GFAP. As the gold standard for acute changes, we've already determined that GFAP greatly increases after a game of contact football. but we still have many resources in our playbook & our study has already taken a big step in the right direction.

Ultimately, my goal is to do what hasn't been done before, and that is to solidify a simple, non-invasive test to help detect sport related brain injury. And I'm pretty confident the sacrifice for this goal won't be more sprained ankles.

But until then, when you're enjoying a game of football and want to impress a few people. Let them know that not only are you hoping your team wins, but that GFAP levels aren't significantly elevated after the game and blood flow regulation remains intact.

